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IV. *A Letter of Dr. John Quincy, to the late learned Mr. Sam. Moreland, F.R.S. concerning the Operation of Medicines.*

WHAT I had an opportunity some time since of saying in Conversation concerning the Operation of Medicines, and particularly of Purges, I here beg leave to send you for a Re-Examination, because I shall be glad to have my thoughts confirm'd by your Approbation, or be advertis'd of any mistakes which self Partiality may lead me into, before they are too far drawn into Consequences.

With regard to this affair I suppose,

1. That all those parts of an animal Body, which are vascular, or through which any Fluid passeth, from the Intestines to the minutest Fibre, are the seat of Medicine's Operation.

2. That this whole course of Circulation, or Animal Motion is naturally distinguished into three different Stages, by the different capacities of the Vessels and motions of their Contents, each having its proper Out-let, and that these are the seat of the three Concoctions, so often mentioned by Physical Writers; the first in the Stomach and Bowels, having the Anus for its Emunctory; the second, all within the Blood's motion, so far as it retains its Colour, having the Kidneys; and the third, all beyond that Circuit, having the Skin for an excretory Organ.

3. That every Medicine which causeth Evacuation is a Purge.

4. That every Purge operates as a Dissolvent, by fusing the Juices, and increasing the quantity fit for Expulsion;

pulsion; or as a Stimulus, by accelerating their Motions, so as to bring the matter fit for Expulsion, oftener to the secretory Out let; or both.

These Assumptions, which, I expect, will not be disputed, are premised only for the better proof of this grand Proposition.

That a change in the Bulks, Figures, and Motions of the component particles of a purging Medicine, will change the seat of its Operation, and fit it for exertion in larger or lesser Vessels as those mechanical Affections are intended, or remitted.

For Illustration hereof, it may be convenient to attend the management of common Practice, in making a Purge operate more, or less, than it otherwise would do.

Substances which are gross and heavy, as those consisting chiefly of Saline and earthly Particles, such as Tartar, Manna, and the like, if they are reduced smaller by Triture, or repeated Solutions, operate more gently, but if acuated by Acids, or any management which exposeth their Angles more sensibly to the Membranes, they are rougher, and take Place sooner.

Resinous Medicines, as Scammony, Gamboge, Jallap, and most of vegetable Production are more violent, and operate sooner, when they are more tenacious, and adhesive, as in their Extracts, but gentler, when divided by hard brittle Substances, such as salt of Tartar, Sugar, &c.

Medicines which have in their Composition, Sulphur and Salt, are more or less rough, and speedy in their Operation, in proportion to their greater or lesser participation of the Saline Ingredient, and the asperity of its Angles; of this kind are most Minerals, and their Preparations, and it may be sufficient to instance in the management of Antimony, and Mercury;

Mercury; The first of these is by chymical Analysis known to be a composition of a subtil Sulphur and Salt, and the more the Saline Part is let loose by Preparation, and opening the Sulphur, as it is commonly term'd, with the more vehemence will this operate, and the sooner, whereas in its lesser Preparations when the Salts are closely wrap'd up in their native Sulphur they will hardly work at all till they are got into the farthest stages of Circulation. Mercury *per se* is little known as a Medicine, and its first Preparation which makes it into Sublimate, so loads it with Saline Spicula, that it amounts even to a Poyson; but the more those Spicula are broke by Triture, Sublimation, &c. the milder doth it operate, and if to the comminution of its Points be added a Sulphur subtil enough to join it, it may be reduced to so mild a Medicine, as not to be felt, but in the last stage of Operation.

This short View may be sufficient to shew, that it is Excess of Asperity, and Motion in a Medicine, that will not suffer it to pass the Stomach, without irritating it into such Convulsions, as will throw it up again by Vomit; that a farther Comminution, and smoothing its Figure, will admit it into the Bowels, and make it operate by Stool; that a yet farther remission of its Properties will carry it into the Blood, and allow it there to promote evacuation by Urine; and that a yet farther Comminution will pass it into the minutest Canals, where by the same Properties, only in a lower Degree, it will increase Perspiration, or cause Sweat: So that the subtiler Medicines operate in the Capillaries, and smallest Fibres by the same Mechanism, that more gross do in the common stream of the Blood, when they go off by Urine, or

the grossest of all do in the greater Passages, when they promote Stool.

Hence the Skill of Preparing, and Administring of Medicine consists in proportioning its manifest, and known Properties to the Capacity, and Circumstances of the Part it is to operate in, and to intend, or remit its mechanical Affections, as it is sooner, or later to take place in the greater or lesser Vessels.

Of the first Class there are few to be reduced small enough to go beyond the greater Passages, and none of them are worth the Pains they require, to fit them farther than for Diureticks: besides, their natural fitness to attract, and join with the serous Part of the Blood, whenever they get into that Stage of Motion, runs them off by the Kidneys, before they can undergo Comminution enough to get farther; but if by frequent Repetitions of such Medicines, and uncommon Laxity of the Passages, any thing is passed into the Habit, their grossness fouls the delicate strainers, which are left for their Expulsion; and they lodge upon the Glands, and Capillaries in such manner, as induceth Intermittents, which is observable in many Persons, after the use of Cream of Tartar, the common Cathartick Salts, and the purging Waters, especially at the latter end of the Summer, when the heat of the preceding Season hath debilitated the Solids, and left them under too great Relaxation.

Among the resinous Purges, there are many very powerful ones, but where their Operation is desired in the Viscera, Blood and remoter Parts, they must be extreamly divided, and this we find Spirituous Menstruums will do, by taking up the most subtil Parts only, and carrying them into very small Passages, where their Operation is chiefly by Fusion, because the softness of such Substances cannot enable

ble them in hardly any Degree to act as Stimuli, farther at least than ordinary Detergents. And thus we find Aloes, the chief of this Tribe, to go farther into the Habit, and be longer e'er it operates, when managed in a spirituous Menstruum, as in the *Tinctura Sacra*, the *Rad. Turpethi*; And *Colocynth* likewise, with all of the vegetable Kind, that will yield to a spirituous Liquor, are to be carried by that means into the farthest scenes of Animal Action, and there prove efficacious Medicines in Cases, that with other management, they would never be able to reach: And on this Foot it undoubtedly must have been, that we frequently meet with, in practical Writers, many of this sort mention'd, as Alterants; the *Colocynth* particularly by *Helmont*, for all Medicines which operated in the farthest Passages they commonly included under that general Appellation.

But the most efficacious Purges, and those which require the most Skill are from the mineral Kingdom; these abound in solidity beyond any other Materials, and therefore wheresoever they are brought into Action, excel in quantity of Impulse: Many of these therefore want not only the utmost Communion to carry them into the farther Scenes of Operation, but also some restraint to their Asperities, and Motions, to fit them for many Intentions. Thus Sublimate is not only to be much sweeten'd, that is, smoothen'd in its Points, to make it a safe Purge in the larger Vessels; but if it is intended to go farther than the Blood, and those Glands, which in that Circuit, they are most apt to be lodged upon, when it Salivates, it must be rendred not only very fine, but covered with such Substances, as weaken its Points, and make it strain into the last Subdivisions of the Constitution. To this purpose, the common
Practice

Practice wisely contrives in Distempers which lie farthest off, according to the Course of Circulation, to wrap up the Basis of this Medicine, in Sulphurs, and such like Substances, as follow it into its last Division, without giving it any Asperities to make it act as a Stimulus. Thus for all cutaneous Foulnesses, and habitual Taints, the Cinnabar, the Æthiops, and all of that Sortment are in readiness; and that ordinary Sulphurs will cover and deaden the efficacies of Mercurial Preparations, so that they shall not operate, but in such Parts only and in certain Circumstances, is demonstrable in ordinary Salivations, which are to be lower'd at pleasure by Sulphureous Medicines.

Medicines from such Minerals where a Salt, and Sulphur are united by Nature, as they are in some Mercurials by Art, as in Antimony, the native Cinnabar, Steel, &c. are manageable only upon the same Principles, and the more they are designed to be carried into the Habit, the more are they to be restrained by their natural, or adventitious Sulphurs: Steel when opened by, and joined with, the points of acid Liquors, operates sooner, and will sometimes prove even Emetick, but when it is covered with an additional Sulphur, it will go farther, and answer intentions much more remote, as is manifest in the common Preparations of Steel, with Tartar, or Vinegar, and with Sulphur.

This way of thinking on these Occasions, seems to me also the more just, from considering the Texture of those Substances, which by a natural Preparation are fitted for Operation in the minutest part of an Animal Body, such as those of the Aromatick Kind, all which more or less, according to their greater, or lesser Degree of Subtily, and Smoothness promote a Diaphoresis: They consist of exquisitely fine Salts,
covered

covered with a most Subtil Sulphur, as is demonstrable by Chymical Analysis; and the common Sal Volatile Oleosum is an admirable Contrivance upon the same Foundation, where a very Volatile Animal Salt is covered with a most exalted vegetable Oil, whereby it is suited to pass into the minutest Fibres, and make as it were, a Part of the Animal Spirits themselves.

And here it may not be amiss to observe, that all Animal Salts are very Volatile, or easily render'd so, but when bare, and naked, just as the Fire draws them out, with a mixture also of its own Particles in their Composition, they are too pungent to be felt without painful Sensations, but when soften'd with a fine Portion of an opposite Texture, which is smooth and yielding, they become most efficacious, and safe Sudorificks.

On these Considerations it likewise ceaseth to be a wonder why the subtil Salts of Cantharides are more sensibly injurious to the Bladder, than any other Parts, and why Camphire prevents those injuries; for the exquisite smallness of those Spicula makes them imperceptible, but in the most minute Canals, into which the Fibres composing the Membranes of the Bladder are known to be divided; and Camphire blunts their irritations, because its exquisite Subtility enables it to follow them into those Meanders, and sheath their Asperities.

To this purpose it is very remarkable, what many (as I have been informed) now commonly practice in guarding even Mercurials against their stimulating Properties, and sending them into the finest Passages to operate by Fusion, and the bare Force of Impulse: for not only Calomel and the Mercurius Dulcis may be restrained from manifest Operation in the wider
 Passages

Passages, and the Glands about the Mouth, but even the mineral Turbith, which of it self in a small Dose, will operate powerfully by Vomit and Stool, when mixed with Camphire, will not be so much felt in those respects, but go into the farthest Circuit of Motion, and promote the cutaneous Discharge in a more efficacious manner, than any Medicine of less specifick Gravity. But in this management the Camphire is to be mixed but very little before taking, otherwise it hath not this effect, which appears to be from its great Volatility, which makes it in a great measure exhale, while it stands mixed in a Medicine.

I am sensible of many good purposes in Practice, that this Theory is applicable to, but because the Limits I have set my self herein will not suffer me to enlarge, I shall content my self with this only Instance of Camphire, which is enough to suggest to those who turn their thoughts this way, in what Cases, that, and such Substances of like Subtilty, and Texture may be used with success: For the Seat and Causes of many Chronick Distempers lie most remote in the Course of Circulation, and the reason why they elude the ordinary means of Cure, it is to be feared, is owing to the want of sufficient Attention to that particular management of efficacious Remedies, which is necessary to carry their Operations so far; An ordinary Judgement knows how to intend, or remit the Efficacies of Medicines by acuating their Points, and Quantity of Impulse; or softening, and weakening them with Broths, and the gross-express'd Oils of Almonds, or Linseeds in the first and larger Passages; but an active Medicine, or a distemper'd irritating Salt in the minutest Capillaries and Fibres is not to be managed by such coarse Instruments.

If, upon the best examination, these thoughts be found to hold good, which I am much persuaded they in great measure will; I promise my self an opportunity of drawing some farther practical Remarks, and shall venture to communicate them to you, with the same freedom, I now do.

V. An Account of two extraordinary cases in Surgery: Communicated by Dr. Steigenthal, F. R. S.

Ebsterff, May the 15th, 1720.

Present Dr. Nottellman, Mr. Henzel an Officer of the Custom, and Mr. Niemeyer, Auditor.

John Henry Oizmann, aged 31 Years and born at *Barum*, was fifteen Years of Age, when the following Misfortune befel him.

He felt a Spasmus or Cramp in his left Hip, and the inferiour Part of his Leg; as this pain seized him pretty often, he consulted Mr. *Raek* a Surgeon at *Ulzen*, who applied several Plaisters to the place where the pain was, but without any relief to the Patient. After all those fruitless efforts, the Surgeon, to see whether *Oizmann* had still a feeling in his Leg (which to outward appearance was become very brown) made about 37 Incisions over the whole Leg of which the Patient was not at all sensible, except at such times when the Instrument happened to grate upon the Bone, the Periosteum being as yet sound and not infected by the Disease of the Flesh. The Leg however did daily grow blacker, and the pain continued both in the Periosteum and in all the Bodies